

## ABSTRACT

A thermal head printer with image-invariant printing speeds for printing a substantially light-insensitive thermographic material having a print density-driving power level characteristic, the thermal head printer comprising a transport means, one or more thermal heads each having an array of heating elements, a thermal print head drive system capable of supplying power to each of the printing elements, and a calibration means based on the print density-driving power level characteristic of the thermographic material; a process for calibrating a thermal head printer with image-invariant printing speeds, the thermal head printer comprising one or more thermal heads each having an array of heating elements connected to a power supply capable of supplying a given number of heating element driving power levels from 0 to a maximum driving power level number, corresponding to  $P_{\max}$ , to each heating element for printing a substantially light-insensitive thermographic material by image-wise heating the thermographic material with the heating elements, the process comprising the steps of: (i) putting the printer into a calibration mode; (ii) printing one or more step-wedges of print densities by heating the thermographic material with the heating elements at different DPLN's; (iii) determining the optical density of each step of the step-wedge(s) of print densities with a densitometer thereby obtaining the dependence of the print density upon DPLN; (iv) deriving from the dependence, or all the dependences of the print density upon DPLN, a single smoothed dependence of the rate of change of print density,  $D$ , with DPLN,  $\Delta D/\Delta DPLN$ , as a function of DPLN for the thermographic material; (v) establishing a threshold rate of print density change per DPLN for the specific thermographic material being printed; and (vi) setting up the thermal head printer so that the threshold rate of print density increase per DPLN cannot be undercut; and a process for printing a substantially light-insensitive thermographic material with a thermal head printer comprising one or more thermal heads each having an array of heating elements connected to a power supply capable of supplying a given number of heating element driving power levels from 0 to a maximum driving power level number, corresponding to  $P_{\max}$ , the process comprising the steps of: calibrating the thermal head printer according to the above-described calibration process, transporting the substantially light-insensitive thermographic material past the thermal head, and image-wise heating of the

substantially light-insensitive thermographic material by means of the heating elements.